

WHAT IS CLAIMED IS:

1. An image processing apparatus comprising:
  - an input unit which converts read-in image data to digitized image signals or image information generated as digital information to image signals;
  - an output unit which can output the digitized image signals as a printed image; and
  - a programmable image processing unit which subjects the digitized image signals to image processing,
- 10 wherein said image processing unit comprises:
  - a first storage section in which a sequence of image processing and data for image processing are rewritably written;
  - a second storage section which stores image data for an object to be image-processed;
  - 15 an image processing section which grabs image data for an object to be image-processed from said first storage section, and performs data processing by referring to the sequence of image processing and the data for image processing written in the second storage section;
  - 20 a third storage section which temporarily stores a sequence of image processing and data for image processing to be added or updated, that are transferred from an external microprocessor; and
  - a transfer control section which transfers the sequence of image processing and data for image processing to be added or updated from said third storage section to said second storage

section during idle cycle time that said image processing section does not execute image processing, and

5 said transfer control section provides controls for transfer so as to split the sequence of image processing and data for image processing to be added or updated into blocks for a plurality of transfer times and transfer the blocks from said third storage section to said second storage section.

2. The image processing apparatus according to claim 1, wherein  
10 said image processing unit is formed with an SIMD (Single Instruction stream Multiple Data stream) type of processor.

3. The image processing apparatus according to claim 1, wherein  
15 said transfer control section provides controls for transfer so as to split the sequence of image processing and data for image processing to be added or updated into blocks for a plurality of transfer times, each by a predetermined number of pieces of data to be transferred for one time, and transfer the blocks from said third storage section to said second storage section.

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4. The image processing apparatus according to claim 3, wherein  
said image processing unit is formed with an SIMD (Single Instruction stream Multiple Data stream) type of processor.

5. The image processing apparatus according to claim 3, wherein  
a set value of the predetermined number of pieces of data to be  
transferred for one time is included in data downloaded from said  
external microprocessor into said third storage section, and is  
5 set according to the length of idle cycle time determined based  
on the ability of said image processing section to perform image  
processing.

6. The image processing apparatus according to claim 5, wherein  
10 said image processing unit is formed with an SIMD (Single  
Instruction stream Multiple Data stream) type of processor.

7. A method for adding or updating a sequence of image  
processing and data for image processing in an image processing  
15 apparatus comprising:

an input unit which converts read-in image data to digitized  
image signals or image information generated as digital  
information to image signals;

an output unit which can output the digitized image signals  
20 as a printed image; and

a programmable image processing unit which subjects the  
digitized image signals to image processing, and said image  
processing unit comprising:

a first storage section in which a sequence of image  
25 processing and data for image processing are rewritably written;

a second storage section which stores image data for an object to be image-processed;

an image processing section which grabs image data for an object to be image-processed from said first storage section, and  
5 performs data processing by referring to the sequence of image processing and the data for image processing written in the second storage section;

a third storage section which temporarily stores the sequence of image processing and data for image processing to be  
10 added or updated, that are transferred by an external microprocessor; and

a transfer control section which transfers the sequence of image processing and data for image processing to be added or updated from said third storage section to said second storage  
15 section during idle cycle time that said image processing section does not execute image processing,

wherein the sequence of image processing and data for image processing to be added or updated are split into blocks for a plurality of transfer times, and the blocks are transferred from  
20 said third storage section to said second storage section.

8. The method for adding or updating a sequence of image processing and data for image processing in an image processing apparatus according to claim 7, wherein the sequence of image processing and data for image processing to be added or updated  
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are split into blocks for a plurality of transfer times each by a predetermined number of pieces of data to be transferred for one time, and the blocks are transferred from said third storage section to said second storage section.

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9. The method for adding or updating a sequence of image processing and data for image processing in the image processing apparatus according to claim 8, wherein a set value of the predetermined number of pieces of data to be transferred for one time is included in data downloaded from said external microprocessor into said third storage section, and is set according to the length of idle cycle time determined based on the ability of said image processing section to perform image processing.

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10. A computer-readable recording medium in which a program for making a computer execute the method for adding or updating a sequence of image processing and data for image processing in an image processing apparatus comprising:

20 an input unit which converts read-in image data to digitized image signals or image information generated as digital information to image signals;

an output unit which can output the digitized image signals as a printed image; and

25 a programmable image processing unit which subjects the

digitized image signals to image processing, and said image processing unit comprising:

a first storage section in which a sequence of image processing and data for image processing are rewritably written;

5 a second storage section which stores image data for an object to be image-processed;

an image processing section which grabs image data for an object to be image-processed from said first storage section, and performs data processing by referring to the sequence of image 10 processing and the data for image processing written in the second storage section;

a third storage section which temporarily stores the sequence of image processing and data for image processing to be added or updated, that are transferred by an external 15 microprocessor; and

a transfer control section which transfers the sequence of image processing and data for image processing to be added or updated from said third storage section to said second storage section during idle cycle time that said image processing section 20 does not execute image processing,

wherein the sequence of image processing and data for image processing to be added or updated are split into blocks for a plurality of transfer times, and the blocks are transferred from said third storage section to said second storage section.

11. A computer-readable recording medium in which a program for making a computer execute the method for adding or updating a sequence of image processing and data for image processing in an image processing apparatus comprising:

5       an input unit which converts read-in image data to digitized image signals or image information generated as digital information to image signals;

      an output unit which can output the digitized image signals as a printed image; and

10       a programmable image processing unit which subjects the digitized image signals to image processing, and said image processing unit comprising:

      a first storage section in which a sequence of image processing and data for image processing are rewritably written;

15       a second storage section which stores image data for an object to be image-processed;

      an image processing section which grabs image data for an object to be image-processed from said first storage section, and performs data processing by referring to the sequence of image processing and the data for image processing written in the second storage section;

      a third storage section which temporarily stores the sequence of image processing and data for image processing to be added or updated, that are transferred by an external microprocessor; and

a transfer control section which transfers the sequence of image processing and data for image processing to be added or updated from said third storage section to said second storage section during idle cycle time that said image processing section

5 does not execute image processing,

wherein the sequence of image processing and data for image processing to be added or updated are split into blocks for a plurality of transfer times, and the blocks are transferred from said third storage section to said second storage section; and

10 wherein the sequence of image processing and data for image processing to be added or updated are split into blocks for a plurality of transfer times each by a predetermined number of pieces of data to be transferred for one time, and the blocks are transferred from said third storage section to said second storage

15 section.

12. A computer-readable recording medium in which a program for making a computer execute the method for adding or updating a sequence of image processing and data for image processing in an image processing apparatus comprising:

an input unit which converts read-in image data to digitized image signals or image information generated as digital information to image signals;

an output unit which can output the digitized image signals as a printed image; and

a programmable image processing unit which subjects the digitized image signals to image processing, and said image processing unit comprising:

5 a first storage section in which a sequence of image processing and data for image processing are rewritably written;

a second storage section which stores image data for an object to be image-processed;

10 an image processing section which grabs image data for an object to be image-processed from said first storage section, and performs data processing by referring to the sequence of image processing and the data for image processing written in the second storage section;

15 a third storage section which temporarily stores the sequence of image processing and data for image processing to be added or updated, that are transferred by an external microprocessor; and

20 a transfer control section which transfers the sequence of image processing and data for image processing to be added or updated from said third storage section to said second storage section during idle cycle time that said image processing section does not execute image processing,

25 wherein the sequence of image processing and data for image processing to be added or updated are split into blocks for a plurality of transfer times, and the blocks are transferred from said third storage section to said second storage section;

wherein the sequence of image processing and data for image processing to be added or updated are split into blocks for a plurality of transfer times each by a predetermined number of pieces of data to be transferred for one time, and the blocks are transferred from said third storage section to said second storage section; and

wherein a set value of the predetermined number of pieces of data to be transferred for one time is included in data downloaded from said external microprocessor into said third storage section, and is set according to the length of idle cycle time determined based on the ability of said image processing section to perform image processing.